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The objective of this study was to examine the attitudes of elementary school children toward school and subject matters as they related to such factors as sex and grade level. A two-instrument battery, the Affective Reporting System, was administered to 2,846 elementary school children. Results indicated a general decline in attitude toward school and several subject matter areas from grades one to six. Differences between boys and girls were found in almost all subject matters and school in general. Recommendations were made for research to discover sources of this decline. (Author/MV)

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The Attitudes of Elementary School Children Toward School and Subject Matters

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ABSTRACT

The objective of this study was to examine the attitudes of elementary school children toward school and subject matters as they related to such factors as sex and grade level. A two-instrument battery called the "Affective Reporting System" was administered to 2,846 elementary school children. Results indicated a general decline in attitude toward school and several subject matter areas from grades one to six. Differences between boys and girls were found in almost all subject matters and school in general. Recommendations were made for programmation research to discover sources of this decline.

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THE ATTITUDES OF ELEMENTARY SCHOOL CHIDLREN TOWARD SCHOOL AND SUBJECT MATTERS

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While the measurement of school achievement has had a long history, the systematic measurement of student attitudes toward school and toward various subject matters comprising the curriculum has been conspicuously infrequent. One reason for this lack of attention may be that the attitudes of students may be considered unimportant. In a needs assessment study, Thomas (1975) found that the attitudes of students toward mathematics was ranked by a random sample of Oregon citizens as the least important of six major factors studied. These results were replicated with samples of principals and teachers. Such studies suggest there is little perceived value in promoting and measuring positive attitudes toward learning.

A second reason for insufficient attempts at measuring attitudes of children toward school and subject matters may be the lack of suitable instrumentation (Knaupp, 1973; Meier and McDaniel, 1974; Engin, Wallbrown, and Brown, 1976; Perney, 1975). Several of the available instruments reportedly possess deficiencies that mitigate against their use (e.g., Deck and Barnette, Note 1; Aiken, 1970, 1976). Of the instruments appropriate for elementary school children, most are useful for measuring only one subject matter at a time or measured subject matter interest scales in multi-dimensional terms. None that were reviewed by us had the capacity to reliably detect attitudes toward more than one subject matter, as well as toward school, in a single instrument.

There are, however, a number of reasons why the measurement of attitudes of students toward the institution of school and its subject matters is important. First, educators and psychologists have supported affective education and the role of attitude toward present learning and future learning (e.g., Epstein and McPartland, 1976). Mager (1968, p. 3) succintly stated:

> "The sole intent is to aid in sending students away from your instruction anxious to use what you have taught them--and eager to learn more."

This statement presumes a positive relationship between attitude and learning, and there is indeed a small body of research that suggests a small but positive relationship between measures of achievement and measures of attitudes (e.g., Aiken, 1970, 1976; Brodie, 1964; Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, and York, 1966; Neale, Gill and Tisner, 1970; Roshal, Frieze and Wood, 1971).

In addition to utilitarian concern for attitudes that facilitate learning, it seems reasonable to assert that the quality of attitudes is a legitimate humanitarian concern in its own right. While some might argue that a certain amount of negative feeling is an inevitable by-product of the rigors and constraints of schooling, it should in any case be considered a cost, not a benefit, of the process.

Whether for utilitarian or humanitarian reasons, states like Oregon have mandated that public schools both promote and certify minimum standards in a wide variety of attitudinal areas, including the development of a positive attitude toward learning (Oregon State Department of Education, 1974). When one considers what a massive proportion of human time and effort is devoted to schooling, it seems curious indeed that we have not examined more closely how the participants feel about it, and how their feelings affect its functioning.

The purpose of this present study was to examine the attitudes of elementary school children toward school and toward several subject matters with respect to some basic classification variables: grade level; region of the state; and sex. Grade level was selected in order to examine the possibility that attitudes toward school and various subject matters may be declining as a function of grade level (Thomas, 1975b, Thomas, 1976). Selecting region as one of the variables in the study permitted the examination of differences that may exist between largely urban, suburban and rural areas of the state. The selection of sex as a third variable of the study was based on the expectation that attitudes toward subject matters would be strongly related to the sex of the student. There is certainly ample evidence of sex differences in most cognitive standardized tests, particularly verbal and quantitative areas. Generally boys are believed to perform better in areas such as mathematics, science and physical education whereas girls tend to achieve more highly and prefer subject matters such as reading, social studies, art and music. Such differences as have been observed are usually attributed to cultural differences in male and female roles, and not to physiological differences. If true, attitudinal factors would seem even more vulnerable to cultural influence than cognitive factors. These hypotheses require more than just casual observation and thus sex of the student becomes an important variable in the study.

A secondary aspect of this study may be viewed as complementary to a study reported by Haladyna (Note 2) which dealt with the psychometric properties of two attitude instruments. In that study the internal consistency and construct validity of two instruments were examined. Confirmation of predictions regarding the construct and its measures is one form of evidence for the construct validity of these measures. Therefore, the present study

is intended to fill a gap by providing descriptive data based on a large sample, of how elementary school children view school and aspects of its curriculum, as well as provide additional evidence for the construct validity of the attitude measures employed.

METHOD

Sample and Population

A statewide survey of all elementary school teachers in Oregon was conducted as part of an evaluation of a nationally funded project, the National Science Foundation's Oregon System of Mathematics Education (Haladyna, 1975). Nearly 300 of the respondents of this survey volunteered to participate in the study, and of this number, 250 teacher voluntarily submitted data. While there is no information about the students other than the grade level, region of the state represented, and sex of the students, this sample of teachers adequately represented grade levels, one through junior high school, and regions of the state, Portland-metropolitan area, east of the Cascade Mountains, and west of the Cascade Mountains. The teachers appear to be a congruent sample of the entire population of the teachers in the state in terms of years of teaching experience, manner in which mathematics is taught, and inservice education. This sample differs from the population in terms of degree of interest in mathematics education. All things considered, this sample was judged, on a logical basis, to be representative of the entire population of teachers and students in the state of Oregon.

Instrumentation

A two instrument battery, the Affective Reporting System (ARS)[1], was devised by the authors for the purpose of determining the relative degree and magnitude of attitudes toward school and toward from five to seven subject matter areas.[2] The primary grades versions of the two instruments, ME and WHAT I LIKE BEST (WILB) contained attitude scales for the subjects of reading, math, physical education (PE), art, and music; while the intermediate grades versions contained these five subject matter attitude scales and, in addition, ones for social studies and science.

ME employs a three point rating scale for each item, with faces expressing happiness, neutrality, and unhappiness. Five items comprise each scale, and a standard format is used in the questioning for each of the scales of ME. Unlike WILB, ME contains an additional attitude-toward-school scale.

WILB differs from ME with respect to the manner in which students are questioned. All possible pairs of subject matters are presented, and each student is asked to select the subject matter preferred. This pair-comparison technique forces an ordering of subjects for each student. As a consequence, data obtained is characteristically more ordinal, and it is impossible for more than one subject matter to receive a very high or very low ranking with any student. That is, the frequent selection of one subject matter mitigates against the frequent selection of all others. Thus, the data typically assumes an ordering from frequently chosen to seldom chosen.

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[1]The ARS may be obtained from the authors, at cost, for research purposes only. Please make any request in writing to the authors, c/o Teaching Research, Monmouth, OR 97361.

[2]The interested reader can observe the instrument modifications which have taken place by contrasting the instruments contained in Thomas (1975b), Thomas (1976), with the present instruments.

The psychometric properties, namely the numerical scales, estimates of reliability and evidence for the construct validity, of ME and WILB are presented in a study by Haladyna (Note 3). ME has consistently high reliability estimates, ranging from .61 to .89, the lower estimates being attributable to a defective item in the reading and the school attitude scales. Construct validity was amply demonstrated for ME for both primary and intermediate versions of ME. WILB on the other hand had less than satisfactory reliability estimates, which were attributed to the small number of items for the primary grades version. The intermediate grades version of WILB possesses moderate reliability estimates. Evidence for the independence of WILB scales was unclear for the primary version and clear for the intermediate grades version. It was concluded that ME was by far the superior instrument and that WILB serves only to replicate and confirm findings that were observed with ME.

Procedures

The ARS was designed to be administered and scored by teachers in the classroom in less than one hour. It is believed that the attractiveness of this feature coupled with the strong interest by teachers in the attitudes of their students, had much to do with the large number of volunteers for the study.[3] Data was collected by grade level, region of the state and sex as the only student identifiers. Precautions were taken not to record student names to insure student privacy as well as to avoid any possible comparisons among classrooms, schools, or districts. Teachers were offered the use of the ARS package and statewide norms in exchange for the data.

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[3]In the statewide survey (Haladyna, 1975), over 50% of all respondents indicated an interest in affective measurement.

Analysis of Data

Means and standard deviations were computed for all scales by all levels of each classification variable. This simplified tabulation of all data by these classification variables necessitated one-way analysis of variance or simple t-test with the boy-girl comparisons.

Analysis of variance based on large samples is subject to instances where trivial differences are often statistically significant. As a means of protecting against this danger of attributing meaningful differences to those trivial but statistically significant results, the confidence level of .01 was employed for rejecting the null hypothesis, and the practical criterion of 1/3 of a standard deviation between any pair of sample means within a classification variable level was employed (as suggested by Tallmadge and Horst, 1974). This two-step procedure assumes that the practical importance of a difference between means is determined by the consistency of the difference and the amount of the difference.

RESULTS AND DISCUSSION

Grade Level Analysis

Means and standard deviations for each of the scales of ME by grade level are presented in Table 1. From these results there are three notable findings:

1. Attitudes toward school show a steady decline from grades one through junior high school, with the sharpest drop occurring between grades one and two, between grades four and five, and between the sixth grade and junior high school. The data unmistakably suggest that children are somewhat positive about school but grow increasingly disenchanted throughout the years (see Thomas, 1975b; Thomas, 1976). By junior high school, they

appear to be extremely negative. What is particularly surprising is that this attitude toward school doesn't seem to carry over to specific subject matters. For example, reading shows a fairly stable pattern across the grades, with math following a similar trend. PE and art fluctuate without any particular pattern. Music was the only subject matter to parallel this downward tendency of attitude toward school, throughout all the grades, but the mean ratings toward music were consistently above neutrality until grade six, and even then the downward trend was very slight. It is also important to note that the mean ratings of all subject matters except one were above the mean ratings of attitude toward school.

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Insert Table 1 here
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2. Social studies is the least popular of all subject matters regardless of grade level (see Table 1). The magnitude of the differences between the most popular, art, and the least popular, social studies, is a remarkable 3.41 scale points, more than any standard deviation reported in Table 1. Data bearing on this for primary grades and beyond junior high school would certainly present a more complete picture. Nonetheless, it is clear that there is a serious deficiency present in the area of social studies.

3. In seven of eight scales, there is a large magnitude decline between the sixth grade sample and the junior high school sample. There is no reason to suggest that the junior high school sample of 401 students was biased in a negative way, or that the sample of sixth grade students was biased in a positive way, so the results suggest a large scale decline in attitudes toward virtually everything that happens in the school. The only exception, music, began this large magnitude decline a year earlier.

Table 1

Means and Standard Deviations and Results of Analyses of Variance by Grade Level for ME

Attitude Toward	Grade One mean	s.d.	Grade Two mean	s.d.	Grade Three mean	s.d.	Grade Four mean	s.d.	Grade Five mean	s.d.	Grade Six mean	s.d.	Jr. High mean	s.d.	Total mean	s.d.	F	p ≤	Practical Significance[1]
Reading	5.58	2.6	5.78	2.5	5.49	2.6	5.56	2.6	5.46	2.4	5.25	2.3	4.70	2.4	5.38	2.5	7.49	.001	no
Mathematics	5.96	3.0	5.64	3.1	5.98	3.1	5.58	3.1	5.65	2.8	5.43	2.8	4.54	2.6	5.51	2.9	10.21	.001	yes
PE	7.82	2.4	8.41	1.9	8.03	2.4	8.57	2.0	8.04	2.3	7.73	2.5	6.94	2.6	7.92	2.4	20.59	.001	yes
Art	7.97	2.5	8.54	2.0	7.97	2:7	8.82	1.8	8.26	2.2	8.32	2.1	6.67	2.7	8.10	2.4	37.04	.001	yes
Music	6.91	3.0	6.64	3.1	6.49	3.3	6.13	3.1	6.38	3.0	4.71	3.4	4.96	3.3	5.93	3.2	33.60	.001	yes
Social Studies	----	---	----	---	----	---	4.72	3.3	3.78	3.0	4.25	2.9	3.71	2.7	4.14	3.0	10.90	.001	no
Science	----	---	----	---	----	---	6.60	3.1	5.98	3.2	6.10	3.1	5.04	2.9	5.97	3.1	18.77	.001	no
School	6.05	2.4	5.35	2.5	5.26	2.5	5.36	2.4	4.01	2.2	4.11	2.1	3.47	2.0	4.69	2.4	66.00	.001	yes
Sample Size	337		278		351		444		448		587		401		2845				

[1]Determined thus: $\bar{x} - \bar{\bar{x}} \geq \frac{s.d.}{3}$

In addition, only music showed a decline across grades resembling the trend of attitudes toward school. Other subject matters exhibited fluctuations of a minor magnitude. Any suspicion that "mathephobia" is a tendency in elementary school children was not supported by these data. Both reading and mathematics are rated in the middle of the scale with art and PE scoring well above all others. If ME and WILB are indeed useful measures of the constructs they are purported to measure, then the results reported for ME should be replicated when using WILB with the same sample of students.

WILB. The results of a similar analysis for WILB by grade level across the scales is presented in Tables 2 and 3. It is important to observe that WILB is a pair-comparison instrument and by its very nature forces students to decide between all possible pairs. Unlike ME, responses are not free to vary from scale to scale. Instead, WILB scales are dependent upon each other. Haladyna (Note 3) reports that correlations among WILB scales are uniformly low and negative. Further, scale scores from the primary instrument are not comparable to the intermediate grades version due to the fact that the former had four items per scale while the latter had six items per scale. Thus the data are not entirely comparable and are summarized separately.

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Insert Tables 2 and 3 here
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WILB lacks an attitude scale toward school so the comparison of attitudes toward school across grade levels cannot be made.

Data obtained with WILB indicate that social studies was again found to rank the lowest among all subject matters. No other scale even approached the level of social studies. The magnitude of the difference between the most popular, PE, and social studies was 1.89 scale points for the intermediate grades sample, which is nearly two standard deviations. The low standing for social studies is clearly replicated in WILB.

Table 2

Means and Standard Deviations and Results of Analyses of Variance by Primary Grade Levels for WILB

Attitude Toward	Grade One mean	Grade One s.d.	Grade Two mean	Grade Two s.d.	Grade Three mean	Grade Three s.d.	Total mean	Total s.d.	F	$p \leq$	Practical Significance[1]
Reading	1.80	1.1	1.50	1.1	1.49	1.2	1.58	1.1	6.96	.001	yes
Mathematics	1.59	1.2	1.47	1.2	1.84	1.4	1.65	1.3	7.64	.001	no
PE	2.26	1.1	2.43	1.0	2.40	1.1	2.37	1.1	2.08	.122	--
Art	2.4	1.2	2.88	1.0	2.70	1.1	2.68	1.1	12.28	.001	yes
Music	1.9	1.2	1.72	1.2	1.57	1.2	1.71	1.2	7.46	.001	no
Sample Size	273		328		377		978				

[1]Determined thus: $\bar{x} - \bar{\bar{x}} \geq \frac{s.d.}{3}$

Table 3

Means and Standard Deviations and Results of Analyses of Variance by Intermediate Grade Levels for WILB

Attitude Toward	Grade Four mean	s.d.	Grade Five mean	s.d.	Grade Six mean	s.d.	Jr. High mean	s.d.	Total mean	s.d.	F	$p \leq$	Practical Significance[1]
Reading	1.48	1.0	1.82	1.0	1.78	1.0	1.77	1.1	1.72	1.0	9.46	.001	yes
Mathematics	1.85	1.2	1.97	1.2	2.01	1.2	1.78	1.2	1.91	1.2	3.70	.011	--
PE	2.98	1.0	3.04	1.0	3.00	1.1	2.94	1.1	2.99	1.1	0.84	.997	--
Art	3.12	0.9	2.85	1.0	2.86	1.1	2.61	1.2	2.85	1.1	17.70	.001	yes
Music	1.86	1.0	1.81	1.2	1.54	1.1	1.87	1.3	1.75	1.2	10.04	.001	no
Social Studies	1.08	1.0	0.90	0.9	1.15	1.0	1.26	1.2	1.10	1.0	10.45	.001	no
Science	1.61	1.2	1.59	1.1	1.65	1.1	1.76	1.2	1.65	1.1	1.82	.139	--
Sample Size	401		489		574		440		1904				

[1]Determined thus: $\bar{x} - \bar{\bar{x}} \geq \frac{s.d.}{3}$

The drop between sixth grade and junior high school cannot be examined using WILB due to the fact that scores are not allowed to freely vary.

The decline in music is documented in the primary and intermediate grades samples. Although statistically significant, this decline in music didn't meet the criterion for practical significance. Reading shows an initial drop but a levelling across grades. Math shows a slight increase in the primary grades, and a slight decrease in the intermediate grades and junior high school, but neither of these were practically significant. PE and math showed a drop from grade six to junior high school. However, this drop was not statistically significant. Art shows a stable trend across the primary grades, but a steady decline in the intermediate grades and junior high school. Social studies and science appeared stable in the intermediate grades with no important changes.

Analysis by Region of the State

The state of Oregon contains three distinct regions: the urban area of Portland and its suburbs, communities east of the Cascade Mountains, and communities west of the Cascade Mountains. Census data show that the largest percent of population is represented by the urban Portland region, while the eastern region is least populated and quite remote from the rest of the state. The region west of the Cascades includes many of the larger cities of the Willamette Valley. This regional analysis has little generalizability beyond Oregon but illustrates the potential of such regional analyses in similar studies of large populations.

The regional analysis is also important in further providing evidence for the replicability of findings between ME and WILB.

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Insert Table 4 here
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Table 4

Means and Standard Deviations and Results of Analyses of Variance by Region of the for ME

Attitude Toward	Group	Metropolitan mean	Metropolitan s.d.	East mean	East s.d.	West mean	West s.d.	F	p ≤	Practical Significance[1]
Reading	primary	5.18	2.6	5.89	2.5	5.82	2.5	7.17	.001	--
	intermediate	5.19	2.4	5.30	2.3	5.25	2.4	0.23	.001	--
Math	primary	5.61	3.1	5.96	2.4	6.03	3.0	1.92	.145	--
	intermediate	5.28	2.8	5.34	2.8	5.32	2.9	0.05	.999	--
PE	primary	7.69	2.5	8.18	2.2	8.28	2.1	7.04	.001	no
	intermediate	7.55	2.6	8.33	2.1	7.65	2.5	16.15	.001	yes
Art	primary	7.92	2.7	8.22	2.4	8.26	2.3	2.00	.133	--
	intermediate	8.16	2.3	8.14	2.2	8.00	2.4	0.98	.999	--
Music	primary	6.03	3.4	6.08	3.2	7.24	2.8	18.20	.001	yes
	intermediate	4.75	3.4	5.42	3.3	5.81	3.23	14.09	.001	yes
Social Studies	primary	----	---	----	---	----	---	-----	----	--
	intermediate	3.91	3.0	4.40	2.8	4.04	3.1	3.59	.027	--
Science	primary	----	---	----	---	----	---	-----	----	--
	intermediate	6.25	3.1	6.12	3.1	5.74	3.1	4.53	.011	--
School	primary	5.28	2.4	5.68	2.4	5.72	2.6	20.18	.04	--
	intermediate	3.93	2.1	4.03	2.2	4.00	2.2	0.26	.999	--
Sample Size	primary	330		125		511		966		
	intermediate	369		509		966		1844		
	total	699		634		1477		2810		

[1] Determined thus: $\bar{x} - \bar{\bar{x}} \geq \frac{s.d.}{3}$

ME. Of the 14 tests of statistical significance, only five had probabilities of obtaining the F-ratio by chance alone, $p < .01$. Of these five only three were found to be practically significant. The first of these findings indicated that students in the western region and eastern region of the state were more interested in PE than those from the Portland region. This result was not replicated in the primary grades, but the magnitude of the effect was not as great. Music was rated higher in the west than in other regions for both primary and intermediate grades samples. Most importantly, the students appear to be relatively close in the mean ratings of attitudes toward school.

The analyses by region did not seem to be as fruitful as the analyses across grade levels. When employing the criterion of practical significance, only the subject matter scales of PE and music showed regional differences which suggested some unique influences residing in the Portland area of the state.

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Insert Table 5 here
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WILB. Looking at a similar analyses by region for WILB, only three of the eleven tests were statistically significant (two of these in PE and music) and none of these three were practically significant. Although the results of ME were not borne out by WILB, the tendencies to show differences among the regions for music and PE were somewhat masked by the less reliable and less valid WILB.

Analysis by Sex

It was hypothesized that the stereotyped subject matter preferences of boys and girls would be borne out by these data; namely, that girls prefer language arts and social studies, music and art, while boys prefer math

Table 5

Means and Standard Deviations and Results of Analyses of Variance by Region of the State for WILB

Attitude Toward	Group	Metropolitan mean	Metropolitan s.d.	East mean	East s.d.	West mean	West s.d.	F	p ≤	Practical Significance[1]
Reading	primary	1.59	1.2	1.62	1.2	1.58	1.1	0.70	.997	--
	intermediate	1.79	1.0	1.65	1.0	1.73	1.0	2.11	.119	--
Math	primary	1.79	1.3	1.92	1.3	1.53	1.3	6.52	.002	--
	intermediate	2.07	1.1	1.95	1.2	1.84	1.2	5.55	.004	no
PE	primary	2.28	1.1	2.15	1.1	2.45	1.1	4.56	.011	--
	intermediate	2.85	1.2	3.13	.9	2.98	1.0	7.70	.001	no
Art	primary	2.72	1.1	2.77	1.3	2.66	1.1	0.56	.999	--
	intermediate	2.91	1.0	2.84	1.0	2.84	1.1	0.68	.999	--
Music	primary	1.62	1.2	1.54	1.1	1.71	1.2	4.28	.043	--
	intermediate	1.67	1.1	1.57	1.1	1.89	1.2	14.38	.001	no
Social Studies	primary	----	---	----	---	----	---	-----	----	--
	intermediate	0.99	1.0	1.16	1.0	1.09	1.0	3.29	.037	--
Science	primary	----	---	----	---	----	---	-----	----	--
	intermediate	1.70	1.2	1.69	1.3	1.60	1.1	1.63	.193	--
Sample Size	primary	330		95		597		1022		
	intermediate	369		488		1026		1813		
	total	699		583		1626		2905		

[1]Determined thus: $\bar{x} - \bar{\bar{x}} \geq \frac{s.d.}{3}$

science, and PE. These notions are suggested by the fact that girls typically out-perform boys in most cognitive tests in the verbal area, while boys generally out-perform girls in the quantitative area.

ME. The means and standard deviations of the eight scales of ME are presented in Table 6 along with the results of the t-tests. Of the 14 tests of statistical significance, 11 met the criterion of $p < .01$; five of these 11 were practically significant.

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Insert Table 6 here
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The following appear to be justified from an inspection of these data.

1. Girls rated art more highly than boys in the primary grades and this difference was widened in the intermediate grades sample. Very large differences between boys and girls were observed for music, with girls rating music higher than boys. Boys preferred science to a greater degree than girls. The differences between boys and girls were small in the primary grades with much larger and more practically significant differences with the intermediate grades sample. This finding suggests that school is less popular with boys. However, the attitudes of both boys and girls become increasingly more negative as grade level increases.

2. Anticipated differences with reading and social studies did not materialize. Reading showed a slight statistical but not practical difference for girls. Social studies showed no differences. Expected differences in mathematics did not materialize with the primary grades sample but started to show with statistical significance in the intermediate grades. One might expect this tendency to continue in junior high school with a stronger preference by boys for math. There was not large scale difference for PE, although boys indicated a stronger liking for PE in the intermediate grades,

Table 6

Means and Standard Deviations and Results of Analyses of Variance by Sex for the Scales of ME

Attitude Toward	Group	Boys mean	Boys s.d.	Girls mean	Girls s.d.	F	p ≤	Practical Significance[1]
Reading	primary	5.35	2.5	5.89	2.6	3.31	.001	no
	intermediate	5.08	2.4	5.44	2.4	3.32	.001	no
Math	primary	5.83	3.1	5.93	3.1	0.53	.999	--
	intermediate	5.16	2.9	5.51	2.8	2.62	.009	no
PE	primary	8.15	2.2	7.95	2.3	1.23	.216	--
	intermediate	7.95	2.3	7.69	2.5	2.59	.009	no
Art	primary	7.91	2.6	8.39	2.3	3.03	.003	no
	intermediate	7.65	2.5	8.55	2.0	8.55	.001	yes
Music	primary	6.19	3.2	7.22	3.0	5.17	.001	yes
	intermediate	4.93	3.3	6.09	3.2	7.73	.001	yes
Social Studies	primary	----	---	----	---	----	----	--
	intermediate	4.20	3.1	4.07	3.0	0.96	.999	--
Science	primary	----	---	----	---	----	----	--
	intermediate	6.32	3.1	5.58	3.1	5.18	.001	yes
School	primary	5.34	2.6	5.81	2.4	2.87	.004	no
	intermediate	3.64	2.1	4.42	2.2	7.75	.001	yes
Sample Size	primary	508		458		966		
	intermediate	941		901		1842		
	Total	1449		1359		2808		

[1] Determined thus: $\bar{x} - \bar{\bar{x}} \geq \frac{s.d.}{3}$

a statistically significant but practically not important finding. The extremely negative attitudes expressed in social studies seemed to be shared by both boys and girls.

In summary, the major finding seems to be the tendency for boys to be less interested in school with the difference widening as a function of grade.

WILB. The results of the analyses of boy-girl differences for the seven scales of WILB can be found in Table 7. Of the 12 t-tests, eight were statistically significant at $p < .01$. Of these, five were also practically significant.

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Insert Table 7 here
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Foremost among the practically significant findings were boys rating PE and science higher than girls. The findings for PE were essentially replicated in the primary and intermediate grades samples. Music was much more highly preferred by girls in both of these samples by .5 scale points, roughly a half of a standard deviation.

Of the three statistically significant but practically insignificant findings, several trends appear to be detected which may widen if data is collected at the high school level. First, reading showed a significantly higher mean for girls, as originally hypothesized. Second, art showed a slightly higher mean for girls.

CONCLUSIONS

From the large number of findings reported in this paper, several important conclusions emerge:

1. There is an unmistakable decline in attitudes toward school which begins in the first grade and continues at least until junior high school.

Table 7

Means and Standard Deviations and Results of Analyses of Variance by Sex for the Scales of WILB

Attitude Toward	Group	Boys mean	Boys s.d.	Girls mean	Girls s.d.	F	p ≤	Practical Significance[1]
Reading	primary	1.53	1.1	1.65	1.2	1.62	.102	--
	intermediate	1.64	1.0	1.81	1.0	3.51	.001	no
Math	primary	1.70	1.3	1.58	1.3	1.39	.161	--
	intermediate	1.90	1.5	1.93	1.2	0.56	.999	--
PE	primary	2.59	1.0	2.12	1.1	6.89	.001	yes
	intermediate	3.14	1.0	2.84	1.0	6.10	.001	yes
Art	primary	2.68	1.1	2.69	1.2	0.00	.999	--
	intermediate	2.71	1.0	3.00	1.0	6.19	.001	no
Music	primary	1.50	1.2	1.96	1.1	6.28	.001	yes
	intermediate	1.54	1.2	1.97	1.1	8.27	.001	yes
Social Studies	primary	----	---	----	---	----	----	--
	intermediate	1.18	1.0	1.02	1.0	3.34	.001	no
Science	primary	----	---	----	---	----	----	--
	intermediate	1.88	1.1	1.41	1.1	9.24	.001	yes
Sample Size	primary	525		453		978		
	intermediate	963		941		1904		
	Total	1488		1464		2952		

[1]Determined thus: $\bar{x} - \bar{\bar{x}} \geq \frac{s.d.}{3}$

It is impossible to determine the factors that underlie this decline from the data collected, but the results certainly suggest that replications should occur with different populations representing other regions of the country and across various dimensions which were not investigated in this study. One of these dimensions should be an urban-rural variable. Gilbert and Cooper (1976) reported urban-rural differences in attitudes toward math. In their study, they also detected an interaction with boys and girls in urban-rural settings. However, this study was limited to attitudes toward mathematics only.

2. Social studies is held in low regard by most studnets in this sample. It is difficult, if not impossible, to ascertain why these ratings are so low. Like the attitudes expressed toward school, replications are needed before one can generalize to the population of all students. Nonetheless, these data indicate that something is seriously wrong with social studies education as it now exists with respect to the attitudes of the students. If attitudes are truly important, a belief to which many educators currently subscribe, then the sources of student discontent must be detected in future studies.

3. There appears to be a very large magnitude decline in attitudes between sixth graders and junior high school students. The transition between a self-contained elementary school and junior high school is typically a difficult one considering the changes that occur with pre-adolescence and adolescence. It would seem important to trace in a longitudinal study the decline of student attitudes with a cross-section of schools in various settings to determine what factors appear to most importantly influence this decline. Perhaps advocates of the intermediate school as an alternative to junior high school will have their arguments fueled by data like these which

indicate that the junior high school has a generally pervasive and negative influence on attitudes toward school and various subject matters.

Less important, but nonetheless a major finding in this study is the existence of strong differences between boys and girls in attitudes toward several subject matters and toward school. Boy-girl differences were observed for the subject of music, science and PE. Attitudes toward school for boys showed an alarming drop when compared to girls. Whatever the institution of school is doing to attitudes of students, it appears to be more seriously influencing boys in a negative direction. As in the case with the other three major findings, replications are needed to develop stronger evidence for the existence of these differences and trends in a national population. Indicators in this study most assuredly call for a serious look at the dynamics of attitudes as they are related to a number of variables.

Many school programs now involve affective outcomes. The ARS appears to be useful in collecting baseline and post-treatment data which is useful for validating these programs. The fact that the ARS is standardized makes these evaluations attractive from the standpoint that norms can be employed to determine the effectiveness of programs in restoring attitudes to an average or improving it beyond what is considered average.

Finally, there seems to be sufficient interest (at least with teachers in the state of Oregon) to collect attitude data using the ARS on a periodic basis for the purpose of assessing their own progress in developing positive attitudes toward learning. Since this objective is explicit in the Oregon Minimum Standards (Oregon Department of Education, 1974), it seems likely that such instrumentation will eventually become as prominent as standardized achievement tests and grade reports of scholastic achievement.

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